Table 1
Cumulative incidence of infection at 1 year with 95% CI

	UCB	MUD	MMUD	p-value
Bacterial	71% (66-75%)	63% (59-66%)	66% (60-71%)	.01
Fungal	15% (12-18%)	8% (7-11%)	13% (9-17%)	.002
Virus (all)	69% (65-73%)	44% (41-47%)	54% (48-60%)	P<.0001

Table 2
Rate of viral infections per patient per year, stratified by graft source

Virus	UCB	MUD	MMUD	p-value
CMV	0.783	0.411	0.598	<.001
Adenovirus	0.099	0.034	0.056	.008
EBV	0.096	0.091	0.152	.04

between UCB and MMUD for bacterial infections (p = .18) nor fungal infections (p = .52); however, UCB recipients had significantly more viral infections compared to MMUD (p <.0001).The rate (infections per patient per year) of CMV reactivation/disease and adenoviral infections was higher in UCB recipients; MMUD had a higher rate of EBV reactivation (Table 2). Infection as a cause of death was similar among the three graft sources at 1 year (41%, 31%, and 38% for UCB, MUD, and MMUD respectively). Overall survival at 1 year was 50% (46 − 55%), 69% (65 − 72%), and 58% (52 − 64%) for UCB, MUD, and MMUD respectively (p <.0001) and this difference was driven by higher treatment related mortality (TRM) as relapse was similar across the groups. The survival was slightly higher with MMUD compared to UCB (p<.04). In conclusion, 1) The incidences of bacterial, fungal, and particularly viral infections are high after alternative donor transplant; 2) Infections are a major cause of death in the first year after alternative donor transplant; 3) The incidence of infection as cause of death was similar among the graft sources; 4) Viral infections are higher in recipients of UCB compared to MMUD. Future directions will focus on preventative techniques and predictors for infection, particularly for viral infections.

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Hospital Length of Stay in the First 100 Days after Allogeneic Hematopoietic Cell Transplantation for Acute Leukemia in Remission: Comparison Among Alternative Graft Sources

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Use of alternative donors (unrelated umbilical cord blood (UCB), haploidentical family members, mismatched unrelated donors (URD)) allows patients without HLA matched sibling or unrelated donors to proceed to HCT. Several retrospective studies show comparable survival outcomes among different alternative graft sources, but the relative cost of HCT by graft source has not been well studied. We compared total hospital length of stay, which included initial hospitalization and readmissions (LOS) in the first 100 days as a surrogate for short-term costs and resource utilization, in a cohort of alternative donor HCT recipients reported to the CIBMTR from 2008-2011. Patients were included if they had received HCT in the US for acute leukemia in 1st or 2nd CR using UCB or HLA-mismatched URD. We also included HLA-matched URD HCT recipients for comparison; there were too few haploidentical HCT reported to the CIBMTR during this time period to allow comparisons. The cohort was restricted to patients receiving similar conditioning and GVHD prophylaxis regimens. We analyzed the 1577 eligible patients in three separate groups: pediatric HCT after myeloablative (MA) conditioning (age ≤18 y, N=368), adult HCT after MA conditioning (N=768) and adult HCT after reduced intensity conditioning (RIC, N=441).Within each of these three groups, we compared match/donor categories with sufficient number of patients. There was no difference in HCT comorbidity index scores by graft sources in any group. Table 1 shows 100 day overall survival and the median total LOS in the first 100 days after HCT. To account for the differential rates of 100 day mortality in some cohorts, we also describe median days alive out of hospital in first 100 days. In univariate analyses, single and double UCB HCT recipients had longer LOS than patients receiving other graft sources, but there was no difference in LOS between single and double UCB recipients. In conclusion; LOS in the first 100 days varies substantially by graft source, with LOS being greater for UCB HCT recipients. LOS is similar between single and double UCB. Ongoing multivariate analyses will consider LOS among graft sources while adjusting for patient and disease related variables. Our data have implications for resource allocation for alternative donor HCT.

Table
Results of univariate analyses

Graft type	N	100 d survival, % (95% CI)	Median total LOS in first 100 d	Median days alive out of hospital in first 100 d
Ped MA HCT				
Single UCB	219	88 (83-92)	47*	50*
Double UCB	80	85 (76-92)	44	55
8/8 URD BM	69	94 (88-98)	40	60
Adult MA HCT				
Single UCB	65	74 (63-84)*	40*	52*
Double UCB	146	79 (72-85)	40	55
7/8 URD BM	42	76 (62-88)	32	64
7/8 URD PBSC	126	79 (72-86)	29	67
8/8 URD BM	92	91 (85-96)	29	69
8/8 URD PBSC	297	90 (86-93)	25	75
Adult RIC HCT				
Single UCB	16	75 (74-85)*	31*	65*
Double UCB	188	80 (74-85)	33	64
7/8 URD PBSC	77	87 (79-94)	20	79
8/8 URD PBSC	160	93 (89-97)	21	79

*P<.05 for group comparison